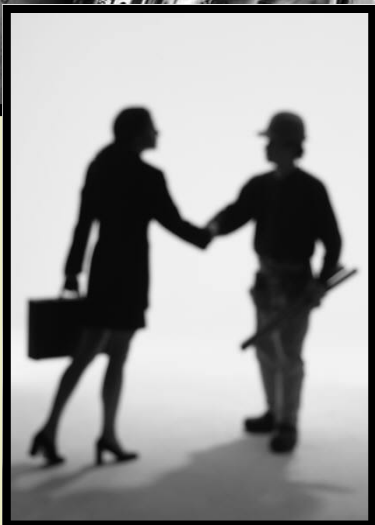


Strategic Skills Initiative

—Summary Report—



Root Causes

*of Occupational and
Skills Shortages in Indiana*

April 2006



INDIANA
WORKFORCE
DEVELOPMENT

Prepared By: Indiana Workforce Development, Research and Analysis Division

Root Causes Of Occupational and Skill Shortages Statewide Summary

In this second phase of the three-part Strategic Skills Initiative, consortia members from Indiana's eleven Economic Growth Regions identified and analyzed the root causes of previously identified occupational and skill shortages within their regions.

The root causes that were identified through this process were based on regional interviews and discussions with experts, surveys, and analysis of secondary data.

Primary data collection methods used included:

- Focus Groups
- Interviews
- Discussions
- Surveys including on-line surveys
- Summits
- Analysis of regional training programs

The following were root causes identified by many of the Economic Growth Regions.

Root Causes	Regions Most Affected	Industries Most Affected
Talent & Pipeline Issues	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	<u>Health Care Manufacturing</u> <u>Life Sciences</u> <u>Logistics</u> <u>Professional, Scientific & Technical Services</u>
Education & Training Capacity	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	<u>Health Care</u> <u>Logistics</u> <u>Manufacturing</u> <u>Professional Scientific, & Technical Services</u> <u>Cross-Industry</u>
Employer Human Resource Capacity, Policies, & Practices	1, 3, 4, 5, 7, 9, 11	<u>Health Care</u> <u>Manufacturing</u> <u>Cross-Industry</u>
Wages & Benefits	1, 2, 5, 8, 9, 10, 11	<u>Health Care</u> <u>Logistics</u> <u>Manufacturing</u> <u>Cross-Industry</u>
Leakage & Brain Drain	1, 3, 5, 8, 9,	<u>Manufacturing</u> <u>Health Care</u> <u>Professional, Scientific, & Technical Services</u> <u>Cross-Industry</u>

Additional root causes of consideration were:

- ‘Stress and Burnout’ were identified by three regions as a root cause.
- ‘Other’ was identified by three regions also listed as a root cause. This category included lack of confidence, demographic changes and regulatory issues.
- One Economic Growth Region identified ‘Traditional Firm Practices, Approaches, and Technologies’ as a root cause.
- One Economic Growth Region identified the emergence of the Hispanic or Latino labor force as a solution to the root causes.

Recurring Themes

The Indiana Department of Workforce Development identified the following key themes after examining the regional reports:

- Many in the labor force have insufficient academic preparation for occupations. There is a lack of education in the workforce especially in the areas of job specific skills and basic skills.
- A lack of awareness and information about career opportunities, avenues, and requirements for some occupations seems to exist.
- For some occupations, there is a lack of available training, qualified faculty, and clinical sites.
- The ability of this initiative to address state and federal regulatory issues that govern the qualifications and standards for occupations may be limited.
- Wages and benefits are a factor in determining the supply of workers for occupation. Wages and benefits can cause workers to change jobs or leave the area.
- New and changing technology will likely be root causes for future shortages. Rapid increases in technology have left workers ill-prepared to move into higher-skilled jobs.
- The current workforce is aging. Up to half the employees in some industries will retire in the next decade.
- Some root causes are more critical than others; some are more critical than others in the short term for quickly reducing gaps; and some are longer term or not as easily address.
- None of the root causes acts independently and none is the pure and sole cause of the shortage. Solving the root problem will not close the skill gap in every case. Secondary causes may remain after the root causes are solved.

Potential Solutions

The third and final report in the Strategic Skills Initiative is the solutions phase. The focus groups and regional discussions have presented some possible actions and strategies that can be undertaken immediately as the third phase of the initiative gets underway.



Economic Growth Regions

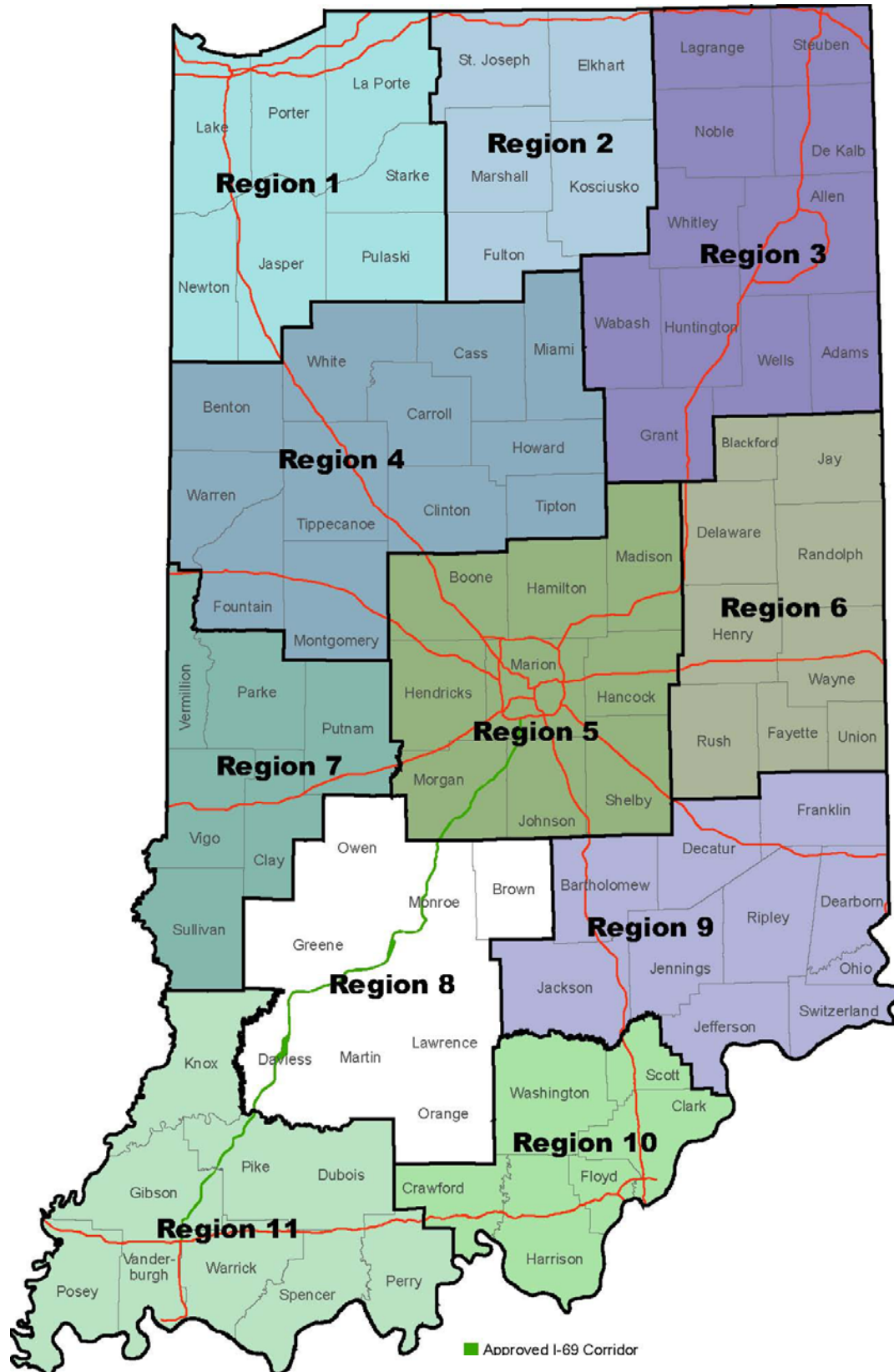


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INTRODUCTION

The project is a statewide initiative to assess industry occupation and skill shortages, identify the root causes of the shortages, and develop appropriate solutions. This report is the second of the series of three reports. The goals of the Root Cause Report are to determine, analyze, and rank the underlying factors that lead to shortages in industry-specific critical occupations. This report summarizes the results of the root cause analysis in which hundreds of people and firms participated.

OVERVIEW

CRITERIA USED FOR IDENTIFYING/TARGETING ROOT CAUSES BY EACH REGION

Economic Growth Region 1 conducted secondary research, administered surveys, facilitated focus groups and led work sessions with employers, individuals, young people, education and training providers and economic developers and workforce intermediaries to determine the root causes of the shortages. Root causes were assigned a number from 1 (not important) to 3 (very important) for each shortage occupation in the three industries. Then a Primary (“most important”) and Secondary (“2nd most important”) root cause was selected. Individual interviews to address emerging findings, validating, clarifying and amending the list were done. The “sensitivity” factor was evaluated to mean the degree to which one would expect occupational shortages to be affected by changes in the root cause. A rating of high, medium, low, and not applicable was given. Two high-sensitivity and two low-sensitivity causes were identified.

Economic Growth Region 2: All coalition partners had opportunity for input into the root cause analysis. A meeting of the coalition was held to present the findings, seek members’ additional insights, and ensure consensus on root causes, sensitivities and impacts. The coalition members represent every county in EGR2, and include representatives of the targeted sub-sectors. The identification and analysis of root causes was conducted on a regional basis. Primary research into root causes was conducted by focus groups, a health care summit, and surveys. Secondary research was conducted on-line. The sensitivity of each cause was ranked. The rank was based on the qualitative sensitivity and quantitative level of impact. All causes are interwoven with each other, so ascribing a quantitative number to resolving a single cause would not be appropriate. Instead, the resolution resulted in high, moderate, or low impact on the shortage.

Economic Growth Region 3 gathered first-person perspectives from target-industry employers and employees, students, service providers and educators at both the secondary and post-secondary levels. Their insights were substantiated by additional secondary research. Primary data collection was done using multiple methods: online surveys, focus groups, interviews and discussions. Root causes were ranked based on survey results. Survey results were offered with two elements of weighing: Average scores—The strength of an average score can be considered a reasonable indicator of the level of widespread appreciation for a given statement being a root cause of the shortage in question. The ratings were from 1 to 6, with 6 being the most important. A threshold of average scores at or above 4.00 was set to conduct further evaluation. Intensity of opinion was indicated by tallying the number of responses in the highest and second-highest category.

Economic Growth Region 4 conducted comprehensive, group-specific surveys to gather information from secondary school students, secondary school counselors and teachers, post-secondary students, job seekers, WorkOne partner organizations, incumbent workers, manufacturing industry employers, and post-secondary education and training institutions. Information was sought to help determine the root causes for the skill shortages. Using the information gathered through the surveys, focus groups were conducted with employers, WorkOne partner organizations, and career & technical education students. Assessment of the sensitivity to change in skill shortages due to root cause resolutions was expressed in percentages based on what reduction of shortages could realistically be made.

Economic Growth Region 5 based its root cause report on interviews and discussion with experts, as well as analysis of secondary data and original data collected by the participants. One additional criterion, the emergence of the Hispanic/Latino labor force, was not a root cause of existing shortages but may be part of a future solution. The rating system used in the report is an ordinal ranking scale of 1 through 5. Factors rated with a “5” are most soluble, and will receive the most attention in the third phase of the EGR 5 Strategic Skills Initiative. Those rated “4” also warrant attention. Factors rated “3” also bear on the skill shortage to a recognizable degree. Factors rated “2” and “1” will not be considered during the solutions phase, as their influence is unclear or not problematic.

Economic Growth Region 6 conducted executive interviews and on- line surveys to identify root causes. Executive interviews and focus groups were conducted with representatives of key industries, education, partners, elected officials, students and workers throughout the region. Research also was conducted to determine why the occupation and skill gaps exist. An overall ranking of priority was assigned to each root cause along with the identification of the responsibility as either “state” or “local.”. Root causes also were given a level of “moderate” or “high” importance. While some of the root causes may have a high ranking of priority, if the responsibility is assigned to the “state,” there may be minimal ability of the region to resolve that root cause.

Economic Growth Region 7's root cause report examines why the skill shortages exist and the supply- and demand-side causes. EGR 7 extensively engaged economic development, business, education, labor and community-based organizations throughout the region in meetings, surveys, interviews with industry representatives, focus groups with area high schools, WorkKey assessments at area high schools, and discussions with area counselors and career and technology directors. "While the root causes are many, they are not insurmountable. Through the development and implementation of a strong solutions plan, the current skill/occupational shortages can be significantly cut or eliminated over the course of the next two to four years."

Economic Growth Region 8 root causes were identified using three methods. First, as a guideline, interviews with key stakeholders in EGR 8 resulted in a priority list of the top root causes in each industry. Second, the interview information was compared to data from the Indiana Business Research Center (IBRC), the SSI Toolkit and other government data sources, as well as to experiences described by other state and national studies. Third, for these multiple sources taken together, the top three to four root causes for each industry were selected, and then matched for consistency against the critical occupations identified. Root causes were ranked for each industry with 1 being the most important and sensitivity was tied to root causes.

Economic Growth Region 9's identification of root causes was conducted on a regional basis. Primary and secondary research methods were used. Three main types of primary research were used: surveys of business partners in the region, focus group meetings with business partners in the region, and personal interviews with specific business representatives. Secondary resources included books, periodicals, magazines, internet, and other literature provided by people throughout the region. The conclusions on primary and secondary root causes are based on insights from both the discussion groups and the employer survey, with analysis/implications provided for the insights.

Economic Growth Region 10's root cause analysis is demand-driven; it is based substantially on a variety of employer inputs and on a survey of workers in the targeted fields. The steps and tools in the root cause analysis process generated a great deal of data, both from primary and secondary sources, and led to outlines for root causes and root cause rankings. Solution suitability ranks are on a scale from 1 through 4. Rank 1 means "there is a high likelihood that significant impacts can be made on the root cause that would lead to a measurable reduction in the occupational shortage through SSI funding". Rank 2 means "opportunities for solution development are possible but the impact is less certain or possibly smaller than a 1 ranking". Rank 3 means "although solution development opportunities are possible, many constraints exist which would limit the returns of SSI investment". Rank 4 indicates "that the root cause is outside the locus of control and therefore inappropriate for SSI funding." Sensitivities were provided for each occupation that discusses the potential impact on the shortage as root causes are addressed.

Economic Growth Region 11: Focus groups were the primary method for gathering root cause information along with secondary data research. Individual interviews were conducted, when focus group sessions were not possible, to obtain the greatest level of input. The identification and analysis of root causes was conducted on a regional basis and was not the result of separate, self-interested activities by individual Workforce Investment Boards or their component jurisdictions. The rank or relative importance of each cause was established by averaging considerations from the previous columns — quantitative, qualitative, and feasibility to address. Quantitative, qualitative, and feasibility to address received scores from 1 through 3 with 1 being major or high, 2 being moderate, and 3 being minor or low. The symptoms and impact of the system inefficiencies were outlined and related to the target occupations through secondary and primary research.

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 1

Occupation

Registered Nurses

Welders, Cutters, Solderers, and Brazers

Sales Representatives, Wholesale and Manufacturing, Except Technical & Scientific Products

Pharmacists

Pharmacist Technicians

**Shortage
Projection
2005 – 2007**

250

207

200

98

63

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> <small>*Denotes Top 5 Shortage Occupation</small>	<u>Sensitivity Rating</u>
Talent and Pipeline Issues Good Information about available jobs and careers, what the work is like, or wage and benefits information is not available and/or not used by young people or jobseekers. Lack of experience in industries or contact with industry representatives also was cited as a cause of shortages in the occupations.	<u>Health Care</u> <ul style="list-style-type: none"> Pharmacy Technicians* <u>Manufacturing</u> <ul style="list-style-type: none"> Welders, Cutters, Solderers, and Brazers* Inspectors, Testers, Sorters, Samplers, and Weighers Mechanical Engineers 	Lack of good information was given a low sensitivity score because the provision of good information is not a promising remedy by itself, although it might be a powerful response in combination with other interventions. The absence of experience of young people and career-changers was considered critically important, but was of medium sensitivity.
Education and Training Capacity Training programs (slots) are not available in sufficient numbers and regional training program content does not correspond to employment demands. Unavailability of training slots is difficult to measure since most waiting lists are usually for health care programs, especially nursing. Increasing the number of classes offered is difficult due to the shortage of available, qualified instructors, and classroom and scheduling constraints. Whether the regional training program content corresponds to employment demands depends on who is speaking: Educators and training providers insist that they talk to employers on a regular basis to determine what skills and abilities they are looking for in graduates. Outside of health care, most employers in Manufacturing and Transportation, Distribution and Logistics say that they are never contacted by educators or training providers and do not use them in their recruitment efforts.	<u>Health Care</u> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* Medical and Laboratory Technologists Pharmacists* 	Both root causes outlined above were given a medium sensitivity score because they are important issues but demand long-term work. Reinventing communities, businesses and jobs takes time.
Leakage and Brain Drain Too many skilled people leave the region to build their careers (outmigration) and too much local talent commutes to Chicago for better job opportunities. Many workers build their skills and work experience in the region, then move outside of the region to work for larger firms. Only 6 percent of employers in the seven counties of Northwest Indiana employ 50 or more workers. Smaller companies are not able to offer competitive salary or benefits. If they cannot commute, they move out of the region altogether.	<u>Manufacturing</u> <ul style="list-style-type: none"> Welders, Cutters, Solderers & Brazers Sales Reps <u>Health Care</u> <ul style="list-style-type: none"> Dental Hygienists Medical & Health Mgrs. 	People leaving the region to build careers was given a medium sensitivity score while too many workers commuting to Chicago for opportunity was given a low sensitivity score.

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
Employer Recruitment and Retention Practices Employers in the region are not challenging workers and supporting them in developing new skills and are not implementing innovative workplace practices that newer workers demand. Employers tend to hire people with the skills they need rather than investing in formal training programs. Most training provided by employers is on-the-job. Employees indicated that professional development was a low priority with employers. Employers indicated that critical thinking and active listening were lacking in applicants. Employers have difficulty implementing innovative practices such as choice of benefits, flexible hours, no weekends, professional development and advancement because many industries rely on shift-work and operate 24 hours a day. There may be a generational gap in expectations of employers and employees. Employers often mentioned "lack of work ethic."	<u>Manufacturing</u> <ul style="list-style-type: none"> Welders, Cutters, Solderers and Brazers* <u>Health Care</u> <ul style="list-style-type: none"> Pharmacists* 	Employers not supporting employees in developing new skills was given a high sensitivity rating. Employers not implementing innovative workplace practices was given a medium sensitivity rating.
Wage Rates and Benefits Pay is not competitive with similar jobs in Chicago. This issue applies mostly to entry-level positions, since occupations that require skills and/or experience often outperform wage levels of most other industries. For TDL, this root cause is often a problem since turnover is usually the result of low pay and benefits. The Northwest Indiana workforce is very mobile: Almost 45,000 workers commute to Illinois every day from this region because of higher wages. Fewer than 14,000 workers from Illinois commute to Northwest Indiana.	<u>Transportation, Distribution & Logistics</u> <ul style="list-style-type: none"> Truck Drivers Industrial Truck and Tractor Operators 	Both of these root causes have a medium sensitivity rating.
Other Other root causes identified were 1) people lack confidence in an industry as a good place to build a career; 2) stress and burnout and 3) demographic changes (aging workforce, increasing diversity, gender imbalance). Lack of confidence occurs more in Manufacturing and TDL than in Health Care. Employment in Manufacturing and TDL continues to decline, with most job openings resulting from retirement and turnover rather than actual growth. Recent closings by local manufacturers have received much media attention, along with continued reports of outsourcing to other countries. This has a negative effect on young people who are looking for a stable industry on which to stake their careers. Stress and burnout among employees most often occurs in Health Care and TDL. For Health Care, people say that they do not have adequate staffing for the workload. For TDL, companies tend to work in a very lean environment where employees have to do "more with less". Most highly skilled workers in Manufacturing are over 40. New hires might not realize how much more skilled entry-level jobs have become and the need for technical experience.	<u>Manufacturing</u> <ul style="list-style-type: none"> 1. Welders, Cutters, Solderers, and Brazers* 1. First-Line Supervisors of Production and Operating Workers 1. Mechanical Engineers <u>Health Care</u> <ul style="list-style-type: none"> 3. Registered Nurses* 2. Licensed Practical Nurses* 2. Pharmacy Technicians* <u>Transportation, Distribution & Logistics</u> <ul style="list-style-type: none"> 1. Truck Drivers 	Lack of confidence received a high sensitivity rating, while stress and burnout had a medium sensitivity rating. Sensitive rating for demographic changes was not addressed.

Excerpts from Report

"People lack an understanding of what the manufacturing industry is truly about...the public believes that manufacturing is not a very secure place to seek employment, mainly because they fear they will be laid off at a moment's notice. *General Motors Cuts 30,000 Jobs* is a newspaper headline that can influence worker thoughts."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 2

Occupation

**Shortage
Projection
2005 – 2007**

Registered Nurses	174
First-Line Supervisors	160
Welders, Cutters, Solderers, Brazers	158
Computer-Controlled Machine Tool Operators	76
Painters, Transportation Equipment	65

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> <small>*Denotes Top 5 Shortage Occupation</small>	<u>Sensitivity Rating</u>
<p>Traditional Firm Practices, Approaches and Technologies</p> <p>Lower productivity as a result of failure to invest in 21st - Century practices results in a workforce characterized by modest or lower level skills and thus, lower wages. The result is fewer people wanting to enter or stay in the occupations.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> All Shortage Occupations* 	<p>Management must increase its skill-building investment – whether it occurs during production hours or off-hours – to maintain quality, quantity and on-time delivery, and thereby to remain competitive. This was rated with high sensitivity.</p>
<p>Training Shortages – Capacity, Availability, Content and Resources</p> <p>Training programs have insufficient educational capacity in numbers as well as geography. There is a lack of foundation basic skills to be successful: math, computer, measuring devices. Upward mobility training and training opportunities also are lacking. Funding is inadequate for nursing school faculty, and there is a lack of qualified instructors and supervised clinical sites.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Respiratory Therapists Medical Assistants Medical Information/Coders <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> CNC Machinists* Painters* 	<p>This was given a medium and high sensitivity score because training programs must be easily accessible, nearby and inexpensive for students to take advantage of them. Some occupations have no formal training programs available. Employers are less able to afford on-the-job training because of production pressures and increasing competition. Other programs have formal training, but the output of the programs has been hindered by program changes. Too few nurses are graduating despite waiting lists for programs and clinical experience.</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Lack of Awareness/Interest</p> <p>Manufacturing appears unstable and insecure, reducing interest in the industry. It also appears to be “drone work,” so schools tend to recommend manufacturing careers to those who are not academically successful. Parents and schools emphasize 4-year degrees over trades; there is still “status” from having a college degree. The numbers of occupations that may be shared at the K-12 level are so numerous that small size occupations and those less glamorous simply get lost. Hospitals run on a 24/7 schedule, which is not attractive to many. Shortage creates higher patient loads and increased stress.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> • Respiratory Therapists • Medical Assistants • Medical Information/Coders 	<p>Due to culture and media, the image of trades is devalued and excessive emphasis is placed on 4-year degrees; so this was given a medium and high sensitivity rating. Manufacturing is historically represented as monotonous, repetitive low-skilled labor in dark, dirty factories. Newspaper and magazines focus on layoffs, closures, and scandals, creating the impression that manufacturing employment is unstable and insecure. If people are unaware of a career, they are not likely to seek training for it, thus limiting numbers being trained and a skilled pool being available. When people feel overworked and they have to give up holidays and family events, or work odd shifts, they are less likely to stay and more likely to reduce hours worked. Young people are not encouraged to enter these occupations.</p>
<p>Wages and Benefits</p> <p>Average wages are lower than elsewhere. Because of those wages, industries are unable to attract graduates from other regions to EGR 2, and also risk losing their own limited graduates and incumbent workers to other cities and states. Even when people are trained for the occupation, they don’t go to work as readily in hospitals because of the wages, and don’t stay in the region or profession because of lower wages.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> • All Shortage Manufacturing Occupations* <p><u>Health Care</u></p> <ul style="list-style-type: none"> • All Shortage Health Care Occupations* 	<p>Inadequate funding for training, especially when climbing the career ladder, is leaving workers in low-wage occupations. Raising awareness of wage disparities through this report is one step toward addressing the issue of the region’s lack of competitiveness. This had a high sensitivity score.</p>

Excerpts from Report

“EGR 2 currently finds itself in a precarious, and potentially dire, situation. Northern Indiana’s 2005 State of the Workforce Report, *Competing for Opportunity* analyzed the region’s position relative to Michiana, the rest of the state and the nation as a whole. According to community, economic and workforce indicators. Northern Indiana was found to be slightly more competitive than Michiana and the nation as a whole, and about equally competitive with the rest of Indiana. But being ‘slightly more competitive’ is a shaky proposition. The world is changing too fast and we are too globally interconnected to keep this position if any internal or external factors change. To maintain its position and improve its competitive position, the region needs to embrace two critical keys to success: knowledge and innovation.”

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 3

**Shortage
Projection
2005 – 2007**

Occupation

Computer-Controlled Machine Operators/Machinists/Mechanics
Registered Nurses
Computer Systems Analysts
Industrial Engineers

490
304
158
75

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Employer Recruitment and Retention</p> <p>This is systemic to the community's outlook, both as others look at it and as it looks at itself. Recruitment of non-resident professionals will be vital until business-education linkages are institutionalized. This is one of the most important root causes. A key component of this root cause is the ability to attract young professionals and families to the region. This capacity is weakened further by the leakage of high-wage employees and their jobs out of Northeast Indiana. Finding adequate employment for spouses is a challenge in this environment. Furthermore, workers are less likely to move to a community where there are no other similar jobs available in case the positions for which they relocate do not work out or for which there are no further development options beyond the company that hired them.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Industrial Engineers* Computer-Controlled Machine Operators/Machinists/Mechanics* <p><u>Cross-Industry Occupations</u></p> <ul style="list-style-type: none"> Computer Systems Analysts* 	<p>EGR 3 is not certain if this root cause can be addressed in the SSI process and will look to potential solutions providers for creative insights.</p>
<p>Education and Training Capacity</p> <p>High school graduates have insufficient academic preparation for the occupations.. There is not enough practical/applied learning for students. It is believed that the more relevant the learning, the greater likelihood that the learning will be retained by the student. Guidance counselors believe internships and experiential learning build greater academic discipline and relevance between education and life. There is a lack of educational facilities to serve all potential applicants for nursing programs. However, the educational facility problem is expected to be corrected soon with a new nursing program in the area. With the addition of 50 nursing seats, nursing school capacity in the area should fall short only in cases of upper demand capacity. The other difficulty in the nursing school area is retaining nursing instructors. Current accreditation standards and state regulations allow for a defined number of students per instructor. Higher pay and benefits are luring nursing instructors away from teaching, having a definite impact on the number of students who may be accommodated in nursing schools.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Computer-Controlled Machine Operators/Machinists/Mechanics* Industrial Engineers* <p><u>Cross-Industry Occupations</u></p> <ul style="list-style-type: none"> Computer Systems Analysts* 	<p>No skill development can take place without a foundation of basic skills. The necessity of training a sufficient supply of nurses has a high sensitivity rating. It seems that EGR 3 is making a good attempt to have sufficient nursing school capacity to accommodate its applicants. However, the issue of retaining nursing instructors is considered critical. Without sufficient instructors, the schools available will not be able to accommodate their candidates.</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
Student and Worker Access to Career Information Guidance counselors lack awareness of the opportunities, avenues, and requirements of the businesses in their areas. The counselors agreed that they do not know what is available to their students. Students have unrealistic expectations of the world of work.	<u>Manufacturing</u> <ul style="list-style-type: none"> Computer-Controlled Machine Operators/ Machinists/ Mechanics* 	Addressing this root cause is an important vehicle for developing meaningful linkages between education and the work world and combating the silo effect.
Labor Force Leakage and Brain Drain Professionals tend to complete their educations and then move to an area with higher salaries and benefits. They tend to seek out the higher paying, large companies as employers. Surveys indicated only 29 percent of those living in Northeast Indiana intend to remain there after graduation. The one answer to brain drain would be recruiting job candidates to the area and retaining them. Securing adequate employment for spouses is a challenge. The capacity for recruiting employees and retaining them is weakened further by the leakage of high-wage employers (and their jobs) out of Northeast Indiana.	<u>Manufacturing</u> <ul style="list-style-type: none"> Industrial Engineers* <u>Cross-Industry Occupations</u> <ul style="list-style-type: none"> Computer Systems Analysts* 	To employers needing trained industrial engineers and computer systems analysts, these root causes carry a high sensitivity rating. It is the feeling that the recruitment of non-residential professionals will be vital until business-education linkages are institutionalized.
Stress and Burnout This is one of the largest problems facing nurses at this time. Much of the stress comes long hours as a result of staffing shortages. The shortages could be alleviated by a proper allocation of nurses, thus reducing the high number of working hours of each employee.	<u>Health Care</u> <ul style="list-style-type: none"> Registered Nurses* 	This was given a high sensitivity rating. Other causes of occupational stress exist and the shortage of nurses will not be fixed in the short-term. Some form of short-term project to address stress in nursing is appropriate while systemic changes take effect.
Talent and Pipeline Issues According to surveys high school graduates lack sufficient preparation for the work in the CNC-MIMM group of occupations. Additionally, guidance counselors have little understanding of the opportunities in the occupations. Potential workers have a sense of entitlement and thus have unrealistic expectations of the work world.	<u>Manufacturing</u> <ul style="list-style-type: none"> Computer-Controlled Machine Operators/ Machinists/ Mechanics 	Employers rate these situations as high sensitivity issues. Actually, the fact that students are graduating without sufficient academic preparation is a critical root cause. Guidance counselors must be made aware of what opportunities await prospective graduates and furnish that information to those students.

Excerpts from Report

"The American Association of Colleges of Nursing (AACN) explains this argument (Instructors are not paid sufficiently to retain them) in stating: 'Almost two-thirds (64.8 percent) of the nursing schools responding to the 2003 survey pointed to faculty shortages as a reason for not accepting all qualified applicants into entry-level baccalaureate programs.'"

"Caution should be taken to keep from placing all responsibility on the shoulders of guidance counselors. The lack of public understanding of the work roles of the modern guidance counselor may deflect responsibility from other administrators and teachers, who also share the burden of building meaningful awareness of career options for our emerging workforce."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 4

Occupation

**Shortage
Projection
2005 – 2007**

Metal & Plastic Workers	660
Material Moving Workers	440
Material, Recording, Scheduling, Dispatching & Distributing Workers	270
Other Maintenance & Repair Workers	220
Supervisors of Production & Operating Workers	40

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Lack of Awareness of Career Opportunities and Pathways in Manufacturing</p> <p>A lack of communication or miscommunication exists among manufacturers, workers, secondary and post-secondary education and training institutions, and the entire regional community. The result has been waning interest among young adults and other marginal workforce participants in even considering careers in manufacturing, let alone preparing for them. Companies are not attracting young people to manufacturing careers due to parents and schools not encouraging students to pursue careers in manufacturing. Secondary and post-secondary students reported that they rely very little on teachers and counselors for career guidance. Parents are cited as the single greatest influence on career decision-making. School counselors rate the quality of labor market and career information available to them as fair to very poor. Those who consider manufacturing employment tend to think in terms of jobs that pay well rather than careers that are personally fulfilling. Manufacturing still has a negative image due to the old stereotype of the assembly line and the work not being interesting and challenging.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> All Shortage Occupations * 	<p>Perceptions and behaviors that lead to structural changes in programs and services will take time for the resolutions of these root causes to “fill the pipeline” from which future skilled workers will flow. Heightening the awareness of manufacturing careers and providing career pathways can realistically reduce the expected regional annual shortage of 900 skilled workers by 10 percent, or 90 workers, during 2007. It is predicted that as the worker pipeline fills, the impact will increase incrementally to 50 percent, or 450 workers, by 2012. Now only 10 percent of secondary students say they are interested in manufacturing careers. If that percentage can be increased over time to 30 percent, it will mirror the percentage of the regional labor force that works in the manufacturing sector</p>
<p>Employer Screening and Assessment Capabilities Are Limited and Less Effective Than Desired</p> <p>Manufacturing companies’ HR departments have to screen and assess too many applicants to find one who has the skills they are looking for. Employers report their recruitment problems are more a matter of too many applicants without the right skills than too few applicants with the necessary skills. While this would seem to be an internal matter that the companies themselves should resolve, the publicly funded workforce development system is in a position to assist them, and it is reasonable to expect that it would.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> All Shortage Occupations * 	<p>Reducing unnecessary friction that currently exists in the selection process will bring manufacturing employers some immediate relief to their skill shortage. Employers report that it takes an average of five weeks to fill a skilled position. By reducing this to a more realistic period of two weeks, the employer would gain 6 percent of a work-year for each new employee hired, or one year for every 16 new workers.</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
Employer Screening and Assessment Capabilities Are Limited and Less Effective Than Desired <i>(Continued)</i>		Expressed another way, if all other variables are held constant, the projected shortage of 900 skilled workers per year could be cut by 56. Resolving employers' limited screening and assessment capabilities will help fill skilled positions faster and improve retention rates.
Misalignment of Secondary and Post-Secondary Education and Training with Student and Employer Needs <p>If misperceptions about manufacturing are corrected and clearer career paths are established, employers' concerns with the skill development of their future employees will remain. Because careers in manufacturing are not highly valued by students, parents, and schools, curricula are not likely to be developed with the academic, critical thinking and work ethic requirements of the manufacturing sector in mind. Concern was expressed that schools are not teaching skills required for success in manufacturing careers. Schools could be more supportive by providing students with information, skill development, and work experience in manufacturing careers. Post-secondary institutions need to better understand the skill needs and provide more industry-specific training. Enrollment in manufacturing-related programs is below capacity, possibly due to potential students not being aware of the programs offered or the employment opportunities in manufacturing. Also noted was the difficulty of finding properly credentialed faculty who are available at the times they are needed and use of obsolete laboratory equipment.</p>	<u>Manufacturing</u> <ul style="list-style-type: none"> All Shortage Occupations * 	<p>As perceptions of career opportunities in manufacturing change and education/training align with the needs of manufacturing employers, the "pipeline" will fill with skilled workers. This will take time. A greater awareness of manufacturing career opportunities and career paths will help satisfy employers' needs for highly qualified, skilled workers. The resolution will stimulate manufacturers' productivity growth as well as support and expand growth in the supply of skilled workers. It is predicted that resolution will help reduce the expected regional annual shortage of 900 skilled workers by an additional 5 percent, or 45 workers, during 2007. As the student pipeline fills, the impact will increase incrementally to 25 percent, or 225 workers, by 2012.</p>

Excerpts from Report

"The root causes, when taken together, point toward a concerted effort to actively promote the features and benefits of manufacturing careers in light of that industry's prominent role in the economic vitality of the region. While acknowledging dynamic changes are taking place in the manufacturing sector that often negatively affect workers and communities, the greater reality is that EGR 4's manufacturing productivity is healthy and great career opportunities await skilled workers. The single most important contributor to meeting employers' demand for skilled workers is a pipeline of career-oriented young (and some not so young) people who show up at an employer's door knowing what the work entails and being prepared to do it."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 5

Occupation

Freight, Stock & Material Movers

Truck Drivers, Heavy or Tractor-Trailer

Registered Nurses

Inspectors, Testers, Sorters, Samplers & Weighers

Nurses' Aides, Orderlies & Attendants

Shortage Projection 2005 – 2007

4,260

3,640

2,422

2,279

1,993

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
Human Resources Capacity Employers lack the ability to find available workers. Small employers seldom have a full-time professional managing personnel and human resources. Employers may get poor results from their recruitment tactics.	<u>Automotive & Motor Sports</u> <ul style="list-style-type: none"> Automotive Service Technicians Firms with 50 or fewer employees 	Survey data, recent regional interviews, and published wisdom point to one conclusion: To the extent that employers of a critical occupation tend to be new companies or small companies, human resource capacity is an issue. A deficiency exists but it is not clear that it causes the skill shortage.
Educational Capacity The region's educational capacity is deficient in one area: nurses and medical professionals. There are too few instructors for the nursing programs. Qualified instructors for nursing education and for allied medical professions must have at least a Master of Science in Nursing Degree. Many must have a Ph.D. in a medical specialty. Instructors earn less (as much as \$15,000 a year) than they can earn in medical practice. The post-secondary institutions have pay schedules, and the amounts they are authorized to pay are insufficient to attract enough instructors.	<u>Health Care & Biotechnology</u> <ul style="list-style-type: none"> Registered Nurses* Allied Medical Professions* Licensed Practical Nurses* 	A deficiency exists in the factor and the causal link is strong. Remedial actions lie within normal scope of the consortium and its partners. Clearing the bottleneck could reduce the shortage of nurses by 50 percent to 100 percent within five years.
Wages Wages are a factor in determining the supply of workers for an occupation. If an occupation pays wages that are significantly higher than alternatives, then the occupation will attract enough workers. Factors other than the wage differential also are important to individuals. The second way that wages can affect the labor supply in a very mobile society is by inducing workers to ply their trade in one location rather than another.	<u>Health Care & Biotechnology</u> <ul style="list-style-type: none"> Registered Nurses* Allied Medical Professions* Licensed Practical Nurses* Nurses' Aides* <u>Advanced Manufacturing</u> <ul style="list-style-type: none"> Production Machine Operators <u>Logistics</u> <ul style="list-style-type: none"> Truck Drivers* 	A deficiency exists in the factor and the causal link is strong. Remedial actions lie within normal scope of the consortium and its partners. Nevertheless, higher wages expand the labor supply, all things being equal.

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>The Pipeline</p> <p>The pipeline is full for only three of the 13 critical occupations – those are in the medical professions. For all the others, there are serious problems in the supply of current and future workers. A major part of this is the image of the industry or occupation. In advanced production occupations, the problem is that the best minds are required, and few of the best students choose to study for technical and production jobs. Truck driving as a career is a delayed entry occupation due to state and federal regulations governing the qualifications and standards for truck drivers, hampering young people from moving into a trucking career right out of school. Trucking careers, therefore, must compete with other occupations which young people can begin earlier. The shortage of warehouse laborers and some welders is caused by high turnover. A major factor in the supply of laborers is transportation. Inspectors and supervisors are usually promoted from within and may lack skill for the jobs. Few people are interested in the unglamorous job of nursing aides.</p>	<p><u>Advanced Manufacturing</u></p> <ul style="list-style-type: none"> • Machinists • Production Machine Operators • Welders • Inspectors, Testers, Sorters, Samplers, Weighers* • Chemical Machine Operators <p><u>Transportation & Logistics</u></p> <ul style="list-style-type: none"> • Supervisors of Transportation • Truck Drivers* • Warehouse Laborers* <p><u>Health Care & Biotechnology</u></p> <ul style="list-style-type: none"> • Nurses' Aides* <p><u>Automotive & Motor Sports</u></p> <ul style="list-style-type: none"> • Automotive Service Technicians 	<p>A deficiency exists in this factor and the causal linkage is strong. Consensus is strong. Remedial actions are within the scope of the consortium. The shortage in machinists could be eliminated in five to eight years by expanding the supply of applicants. Expanding the pipeline is the key to the welding shortage. Inspectors' and supervisors' skill gaps can be eliminated through training. The skill gap for laborers must be solved through a combination of improved wages and benefits, and improved occupation image. Nursing aides' wages are often less than a person could earn in clerical or retail work. Production machine operators draw one of the highest Hispanic/Latino participation rates of the occupations studied and could eliminate the shortage of machine operators within five years.</p>
<p>Brain Drain</p> <p>The brain drain is an important factor in Indiana's labor exchange. Indiana retains fewer people than it graduates. But brain drain is not a critical factor for the 13 critical occupations in EGR 5.</p>	<p><u>Automotive & Motor Sports</u></p> <ul style="list-style-type: none"> • Automotive Service Technicians 	<p>A deficiency exists but it is not clear that it causes the skill shortage. Indiana attracts many out-of-state students. Indiana also has a large capacity for higher education. This produces a large pool of graduates, who are then cherry-picked by nationwide recruiters. Indiana employers have no advantage when it comes to recruiting Indiana college graduates.</p>

Excerpts from Report

"Certain of the root causes contribute substantially to the skill shortages in the critical occupations. None of them acts independently of the labor market, however, and none is the pure or sole cause of shortage. Solving the root problem will not close the skill gap in every case. Secondary causes may remain after the root causes are solved."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 6

Occupation

**Shortage
Projection
2005 – 2007**

Health Diagnosing & Treating Practitioners	213
Health Technologists & Technicians	42
Truck Drivers, Heavy & Tractor-Trailer	11
Business Operations Specialists	11
Life Scientists	11

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Lack of Training Capacity</p> <p>The region has a shortage of qualified health care workers. The importance of the need for such workers is evident in the high level of interest among applicants for training in health care occupations. The current training programs consistently have waiting lists. There is need for more training capacity due in part to the out migration of some of the health care graduates. Another reason for the shortage of health care workers, especially registered nurses, is the lack of qualified instructors. Regarding a shortage of heavy and long-haul truck drivers in the region, the lack of accessibility to training programs in the area is a secondary root cause.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> • Health Diagnosing & Treating Occupations • Health Technologists & Technicians 	<p>Raising the capacity of health care training programs does not guarantee availability of instructors who meet accreditation requirements. The lack of instructors is partly because the educational system cannot match wages and benefits available from employers in the private sector. Lack of capacity and instructors is problematic in that these needs are co-dependent. The issue of accessibility to training is of low importance to addressing the shortage of heavy-truck drivers. As awareness is raised about opportunities available in truck driving, it is likely more people will seek the formal training necessary to enter the occupation -- at which time the importance may increase.</p>
<p>Lack of Career Awareness</p> <p>The primary root cause of the current shortage of truck drivers is a lack of career awareness. Most people are not aware of heavy and long haul trucking as an in-demand and above-average paying occupation. It is especially difficult to attract graduating students to this occupation since they do not meet the national age requirement of 21 to be a truck driver. By the time they reach 21, most young people have chosen another occupation and have long forgotten the option of becoming a truck driver. A lack of awareness also was found for health care careers and qualifications among young adults, counselors, teachers, and parents. High school counselors have emphasized four year college degrees as opposed to vocational and technical training. Lack of career awareness is a secondary root cause cutting across all occupations and skills in the region. With the downsizing of the manufacturing industry, the region's workforce has been caught unaware of other in-demand occupations and career choices.</p>	<p><u>Transportation & Warehousing</u></p> <ul style="list-style-type: none"> • Truck Drivers – Heavy Tractor Trailer* 	<p>Employers, educators, and community partners all provided insight to career awareness issues that may contribute to the occupational and skill shortages in the region. The overriding message is that students and workers are not receiving the awareness, skills, and training necessary to be productive, contributing workers for in-demand occupations. Lack of career awareness was ranked moderate to high in importance</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Other Issues</p> <p>Some root causes negatively impact all occupations and skills in Eastern Indiana. The primary root cause affecting all occupations and skills is a lack of education in the workforce, especially in the areas of job-specific skills and basic skills. Often applicants do not possess the basic skills necessary to be successful in the workforce, let alone the job-specific skills employers need. Also, regulatory and policy issues are important. These include a business-education disconnect; vocational education funding policies; and UI benefits policies. The business-education disconnect affects all industries' need for employees who have good basic math, reading, written communication, problem solving, computer literacy and teamwork skills.</p>	<p><u>Agriculture</u></p> <ul style="list-style-type: none"> Life Scientists Business Operations Specialists <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Metal Workers & Plastic Workers 	<p>Vocational education funding priorities for the Indiana secondary school vocational program reimbursements are established by the state, and many complex issues relate to this root cause. Also, the unemployment insurance (UI) benefits policies, established by the state, are another root cause contributing to the failure of workers to possess the basic skills required by employers. Unemployed workers have no requirement to upgrade their skills to meet the changing technology needs of their current employer or in learning new skills in preparation for their next employer as a condition of receiving UI benefits.</p>

Excerpts from Report

The Eastern Indiana Economic Growth Region has clearly recognized that its future strength will be based, in part, upon the strength and preparedness of each of its counties and how well each of those counties can work together as a region. Each county must be able to compete, retain and grow its economy while discovering and implementing ways the region can work together to enhance and complement those local efforts. This report gives the region the focus and direction for the root causes that, if addressed on a region-wide basis, will allow for each county and the region as a whole to achieve the goals of growing jobs and growing income. "In a nutshell: Thinking locally and acting regionally!"

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 7

Occupation

Maintenance Repairer Workers, General
First-Line Supervisors/Managers of Mechanics
Chemical Technicians
Electrical & Electronic Repairers, Commercial
Maintenance Workers, Machinery

Shortage Projection 2005 – 2007

79
46
40
26
22

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Lack of Training Capacity; Workers Leaving Region after Training</p> <p>There is a shortage of qualified radiological technicians and respiratory therapists. Training capacity expansion is limited by the shortage of qualified clinical settings that are needed for students to complete the programs. The lack of clinical sites limits the number of students who can be enrolled, causing students to commute farther to participate in clinical sites and going to training institutions outside the region. Another cause is a number of students that complete the programs intend to continue their education and will eventually leave the field but do not necessarily leave the region or the health care profession.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Respiratory Therapists Radiologists 	<p>In light of the continued expected demand for health care professionals, the region needs to increase training capacity and discover ways to retain the professionals that have completed their training.</p>
<p>Employment Recruitment and Retention</p> <p>There is a lack of interest in manufacturing careers, a lack of manufacturing career awareness, and less than an optimal relationship between educators and manufacturers. Manufacturers today rely on a workforce that is highly competent and innovative. With so many career options available to today's students, manufacturing as a career field has been neglected by students, counselors, teachers, and parents. It was further identified that even within the manufacturing sector itself, incumbent workers are either not interested in or not aware of the opportunities available in the maintenance field. Also, despite the existing relationship between educators and manufacturers there is a need to develop a structured, long-term plan at both the secondary and post-secondary levels to ensure a strengthened relationship.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance Workers 	<p>Assuming that leaders throughout the region develop and implement, with state and local support, a solutions plan to address the current, severe maintenance skill/occupational shortage, based on the identified root causes, it is not unreasonable to estimate that the reduction of a future shortage could be cut by 50 percent in two to four years, and eliminated within the following three to five years.</p>
<p>Lack of Career Awareness</p> <p>Among the causes identified for the shortage within the region were a lack of career awareness by students, teachers, parents, and the general workforce, and a lack of adequate career education for students from elementary through high school. Closely related to the first two causes was the identification of the fact that high school and college students are not enrolling in math, science, and engineering courses at a rate which is able to keep stride with demand. Finally, a root cause for the shortage of chemical technicians lies with the fact that there is a lack of local or national groups that have developed agreed-upon skill sets required for this occupation.</p>	<p><u>Life Sciences</u></p> <ul style="list-style-type: none"> Chemical Technicians <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance Workers 	<p>It is of utmost importance that local educational institutions be poised to move quickly to identify and meet the changing demands of these high-tech careers.</p>

Excerpts from Report

“EGR 7 is experiencing severe occupational and skill shortages in the health care, manufacturing, and life sciences sectors. While the causes are many, they are not insurmountable. Through the development and implementation of a strong solutions plan, the current skill/occupational shortages can be significantly cut or eliminated over the course of the next two to four years. Close examination of the detailed analysis provided in this report provides clear direction toward changes which must be undertaken to permanently eliminate these causes.

“The required technical skills for any position must be mastered if one is to succeed. Beyond that it is also critically important that employees be able to embrace the requirements of the work environment and culture of the workplace. Technical skills help get the job, but soft skills allow workers to keep the job. If soft skills are to be learned, instruction must begin at a young age and continue throughout life.”

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 8

Occupation

Team Assemblers
Registered Nurses
Electrical & Electronic Engineering Technicians
Nurses' Aides, Orderlies & Attendants
Respiratory Therapists

Shortage Projection 2005 – 2007

234
191
134
59
26

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Career Awareness/Pipelines</p> <p>The K-12 system is not providing sufficient information about careers and career pathways especially those identified as critical to growth in the region. Resources available to adults also need improvement. Many times qualified candidates are not steered to shortage occupations. A lack of outreach to convince potential workers that there are existing job opportunities, are contributing to the shortages. Students also need more information about required skill sets and expectations of employers within each industry. Increased focus on the importance of job retention skills, such as work ethic, positive attitude, and dependability. The whole engineering production chain appears to be facing workforce gaps as the technical workforce is aging and nearing retirement while fewer young people are entering these fields. Efforts should be made to insure that students understand the skills that are needed to be successful in these critical jobs.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> First-line Supervisors/Managers of Production & Operating Workers Team Assemblers* <p><u>Professional, Scientific & Technical Services</u></p> <ul style="list-style-type: none"> Electrical & Electronic Engineering Technicians* <p><u>Health Care</u></p> <ul style="list-style-type: none"> RNs* LPNs Nurses' Aides* Respiratory Therapists <p><u>Hospitality</u></p> <ul style="list-style-type: none"> Hospitality Workers 	<p>The negative image of manufacturing must be overcome. Awareness of the extensive career paths available in manufacturing has to be promoted. Better information about what health care workers actually do and see would offset turnover in career development. More attention needs to be paid at the K-12 level toward matching interest in critical occupations with the correct path of training to create eligible candidates. Marketing of specific shortage occupations and future critical occupations is crucial. As careers become more varied and career pathways more complex, educational providers will have to find better ways for linking educational and training offerings into these pathways. This calls for a very different collaboration among providers and better linkages with area employers.</p>
<p>Training Capacity</p> <p>Several occupations in this project do not have in-region or near-region resources sufficient to fill training gaps. This applies particularly to the health care field. There is a fair amount of interest for pursuing work in health care but limitations in training programs keep them out of the field. A lack of training options is often linked to capacity shortfall created by a lack of qualified instructors. There is inadequate coordination and communication between secondary schools and the manufacturing community. Most training is left to the higher education system, which is not geared toward entry level manufacturing positions. Current training options are not specific to the needs of the critical occupations in manufacturing. Training programs available for electrical and electronics engineering technicians have 50 percent completion rate with only 60 percent of the completers staying in the area.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> First-line Supervisors/Managers of Production & Operating Workers <p><u>Professional, Scientific & Technical Services</u></p> <ul style="list-style-type: none"> Electrical & Electronics Engineering Technicians* <p><u>Health Care</u></p> <ul style="list-style-type: none"> RNs* LPNs Respiratory Therapists* 	<p>Efforts must be made to increase availability and capacity of training programs to better meet the needs of businesses. Changes in the conditions for health care educators are necessary to attract more teachers and expand the training capacity. Regional providers need to work on higher completion rates and placement rates in the region.</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Leakage and Mobility</p> <p>Mobility in and out of the region can be expected and should be embraced. Local firms are not capturing their fair share of engineering graduates and more experienced engineers and technicians are not willing to come back to the region. The aging workforce is further contributing to the shortage problem. The inability to attract and retain new talent combined with the retirement of older skilled workers is creating a large skills gap in critical occupations. The mobility root cause is tied to deep root cause factors, such as quality of life, access to urban amenities and proximity to colleagues with similar interests.</p>	<p><u>Professional, Scientific & Technical Services</u></p> <ul style="list-style-type: none"> Electrical & Electronics Engineering Technicians* 	<p>Some employers are recognizing that the root cause is not only influenced by wages and benefits but quality of work-life, work-life balance, and community quality of life.</p>
<p>Wages and Benefits</p> <p>Like many smaller semi-rural regions, wage rates tend to be below state and national averages -- an inherent disadvantage to begin with. The issue of wages also relates to the competition among various industries for labor within the region. Several occupations have skills that are transferable among other industries, which can cause competition for the same pool of workers. High turnover rate may be symptomatic of noncompetitive wages.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> First-line Supervisors/Managers of Production & Operating Workers <p><u>Health Care</u></p> <ul style="list-style-type: none"> RNs* LPNs Nurses' Aides* <p><u>Hospitality</u></p> <ul style="list-style-type: none"> Hospitality Workers 	<p>Wage increases are necessary as alternative employment for nurses becomes attractive. Compensation for manufacturing supervisors and team assemblers appears to be a factor as the construction industry lures workers away from manufacturing. Wages and benefits cause workers to change jobs or leave the area even when staying the career path might benefit them in the long term. Efforts must be made to increase job retention skills and decrease turnover of team assemblers. Wages in the hospitality industry in general need a boost. The opening of the resorts/casino will change the wage structure for some hospitality occupations as some gaming jobs pay wages that are above average for the region. More environmental factors such as quality of life and perception of the industry have to be addressed rather than simply raising wages to attract workers.</p>

Excerpts from Report

"In addition to the SSI, Region 8 is in the throes of other important development strategy explorations. As a result of recent Base Realignment and Closure (BRAC) deliberations, the Naval Surface Warfare Center, Crane Division, will lose somewhere between 370 and 650 jobs over the next six years. Realignment presents intriguing opportunities for technology company developments and revitalization. Further, issuance of a gaming license in Orange County is raising prospects for heightened recreation, amusement and entertainment industry opportunities in the region. And, as a result of an economic development strategic plan recently adopted by Indiana University, the University is exploring new avenues of engagement with the state and surrounding region. On top of all this, the proposed I-69 extension from Indianapolis to Evansville could serve as an additional growth engine."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 9

Occupation
Registered Nurses
Licensed Practical Nurses

**Shortage
Projection
2005 – 2007**
52
45

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Education/Training: Capacity, Completion, Placement</p> <p>Rapid increases in technology and subsequent increased demand for skills by the region's employer have left workers and students ill-prepared to move into higher-skilled jobs that are being created in the region.</p> <p>Entry-level workers are not prepared with the baseline skills they need for advancement into higher-wage jobs in the health care sector.</p> <p>The current workforce needs substantial skills development in technology applications to keep up with rapidly changing practices for patient care and managing information. Many of the current workers were attracted to the sector because of the desire for providing human services, not because of a desire to work with technology.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> CNC Machine Operators Injection Molding Engineers Mechanical Engineers Microbedded Systems Specialists Nano Mfg. Specialists <p><u>Management</u></p> <ul style="list-style-type: none"> First-line Supervisors 	<p>Employers across all sectors are demanding employees who possess basic verbal and technical literacy on which to build constant learning and flexibility in a rapidly changing workplace.</p> <p>Opportunities in the health care industry will continue to increase, particularly with demands placed on the system by an aging population.</p> <p>The manufacturing environment is rapidly changing. Current workers do not have the education base for the new, high-skill jobs being created. Educators lack good information on the evolving manufacturing workplace.</p> <p>General deficiencies in leadership, management and human relations skills were reported. Many supervisors have advanced through the ranks without formal training in the skills needed for management responsibilities.</p>
<p>The "Pipeline" and Career Awareness</p> <p>The disconnect between employers and educators leaves students and their parents without quality information needed to identify exciting job opportunities in the region and to take actions to build the skills needed to acquire those jobs.</p> <p>The lack of awareness for skills required and expectations are different from educators and employers. There is also a lack of awareness of career paths.</p>	<p><u>Transportation</u></p> <ul style="list-style-type: none"> Truck Drivers Truck Mechanics 	<p>In general, students and the general public are confused about future job opportunities. They see constant changes in the message on availability of "good jobs."</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Wages & Benefits</p> <p>Outside of the high-end jobs of physicians and top-level administrators, jobs in the health sector are generally viewed as low-wage compared to other sectors. Workers often pursue what they perceive to be less-demanding jobs in other sectors.</p> <p>The wage levels combined with the perceptions about the work environments result in few “career changers” from other sectors. Most applicants for jobs in the sector come from workers who already have health care jobs.</p> <p>A specific issue is the salary level of Master's of Science in Nursing faculty members. It is difficult to recruit nurse educators because the pay is higher for persons with those qualifications to remain nurses.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* 	<p>There is much debate about the nature and extent of the “nursing shortage.” The reasons for the shortage are multiple, ranging from cost containment by insurance companies to high demands imposed by the hospital environment on nurses. A key constraint to increasing the pipeline of new trainees is the lack of qualified nurse educators. The relatively low pay for nurse educators is a core issue.</p>
<p>Employer HR Policies and Practices</p> <p>There are difficulties with Human Resources policies and management practices. In the health industry, the difficulties are caused by an increase in retirements and knowledge is being lost. Also the jobs cause lots of stress and turnover.</p> <p>In the transportation industry, difficulties are traced to high turnover due to long hours on the road and lack of career paths. The industry runs mostly on small companies that do not have the ability to have career paths.</p> <p>Qualified workers in the construction industry leave because of the working environment and conditions. The workforce is segmented into higher-skilled, higher-paid unionized workers and lower-skilled, non-union workers.</p>	<p><u>Transportation</u></p> <ul style="list-style-type: none"> Truck Drivers Truck Mechanics <p><u>Construction</u></p> <ul style="list-style-type: none"> Carpenters Electricians 	<p>The region is well-positioned for continued growth in the transportation/warehousing sector. Employers recognize the difficulties of the work environment in this sector and are beginning to take actions to solve some of the issues.</p> <p>Technological advances have been made in construction but it is still highly labor-intensive.</p>
<p>Leakage/ “Brain Drain”</p> <p>Once students leave for college, they are less likely to return to the area. Qualified workers do not see the opportunities in the area or they find better jobs elsewhere.</p>	<p><u>Educational Services</u></p> <ul style="list-style-type: none"> Special Education Teachers Math & Science Teachers 	<p>There is a need to show clear routes to high wages in the region. There are indications that higher-skilled students and workers leave the region because of the relatively low wages.</p>

Excerpts from Report

“According to Robert Reich, there are two things that are happening within the U.S. economy. First of all, mass production is dissipating and leading into custom tailoring of products. Secondly, Reich divides jobs into three broad categories for assessing their contribution to the new global economy. These are ‘symbolic-analytic’ services, routine production services, and ‘in-person’ services.”

“With this shift of industries and a drive for a more competent workforce, comes a strong drive for each person to gain more skills to survive competition from a global market. To ensure that the industries in the region survive the global drive, there is an apparent need to upgrade skills along the way.”

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 10

**Shortage Projection
2005 – 2007**

Occupation

Truck Drivers – CDL (Heavy Tractor-Trailer)	195
Production Workers – Other	139
Welders, Cutters, Solderers & Brazers	39
First-Line Supervisors/Managers of Production	35
Respiratory Therapists	27

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> <small>*Denotes Top 5 Shortage Occupation</small>	<u>Sensitivity Rating</u>
<p>Educational Capacity/Career Ladder</p> <p>A primary reason for the educational crunch in health care is the lack of qualified faculty. EGR 10 has not seen a significant increase in BSN output from IU Southeast for several years. Higher job dissatisfaction due to overwork and staffing issues leads to stress/burnout and more nurses are leaving the field or retiring early. This further increases workloads and job-stress as patient-to-nurse ratios increase causing a continued deterioration in job satisfaction. A lack of clinical sites is often blamed for the educational logjam, with mobility options limited. There appears to be a lack of knowledge regarding a career ladder for manufacturing occupations.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> • Respiratory Therapists* • Registered Nurses • Laboratory Technicians <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> • Industrial Maintenance Technicians • Machinists • First-line Supervisors / Managers of Production & Operating Workers* • Industrial Engineering Technicians <p><u>Transportation & Logistics</u></p> <ul style="list-style-type: none"> • Truck Drivers* 	<p>Even if new entrants are attracted to nursing, staffing shortages at educational sites would lead to qualified entrants being turned away. Additional efforts to assist with certification and additional training and resources would likely prove fruitful. Awareness of opportunities for health care and manufacturing appears to be limited.</p>
<p>Pipeline and Recruitment Issues</p> <p>Changing skills requirements combined with inadequate training is creating a shortage of the skilled workers needed. The image of manufacturing, viewed as a shrinking sector by many and the perception of layoffs, dirty or grimy tasks, low wages and dead-end jobs is pervasive. This has led to career opportunities not being promoted at the high school or community college level. When the economy is expanding, workers in this category have other opportunities available to them outside of traditional manufacturing. Recruitment for this industry has been ineffective and impacted by increasing retirements within the existing ranks. Incumbent workers are not being trained. Many nursing students seek opportunities in Louisville and as many of 40% ultimately take jobs in Kentucky. Pipeline issues for truck driving include: age of 25, CDL, clean driving record and two years' experience produce a possible job opportunity. The cost of getting the CDL license is a primary factor.</p>	<p><u>Manufacturing</u></p> <ul style="list-style-type: none"> • Industrial Maintenance Technicians • Machinists • First-line Supervisors / Managers of Production & Operating Workers* • Industrial Engineering Technicians <p><u>Transportation & Logistics</u></p> <ul style="list-style-type: none"> • Truck Drivers* <p><u>Health Care</u></p> <ul style="list-style-type: none"> • Respiratory Therapists* • Registered Nurses • Laboratory Technicians 	<p>Addressing training and image issues is likely to provide substantial reductions in the shortage of manufacturing occupations. The image of manufacturing as a declining industry with only low-paying jobs must be addressed and the various career paths promoted. Training and appropriate incentives and rewards will have a measurable impact on recruitment and retention. The nature of truck driving results in a different lifestyle, but employers can become more creative in scheduling to allow more time at home and coordinating shipments through hub systems to reduce distance from home.</p>



<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> <small>*Denotes Top 5 Shortage Occupation</small>	<u>Sensitivity Rating</u>
Wages and Benefits Although wages in health care occupations for EGR 10 seem to be competitive with other areas, the overall level is too low to support a family. As usual, wages and image are primary culprits in failures to retain production workers.	<u>Health Care</u> <ul style="list-style-type: none">• Laboratory Technicians <u>Manufacturing</u> <ul style="list-style-type: none">• First-line Supervisors / Managers of Production & Operating Workers* <u>Transportation & Logistics</u> <ul style="list-style-type: none">• Truck Drivers	Increasing nursing wages, while desirable, will not be sufficient to curb the shortage. Relatively low wages and lifestyle issues are primary reasons for the continued shortage of truckers.

Excerpts from Report

"An impact can be made, hopefully in a timely manner, for some occupations with carefully designed solutions. Unfortunately for some occupations the root causes are so systemic and interrelated that a complex and resolute effort by multiple stakeholders will be required to curb long-term worker shortages."

Strategic Skills Initiative Root Causes Report Summary Economic Growth Region 11

**Shortage
Projection
2005 – 2007**

Occupation

Maintenance & Repair Workers	94
Registered Nurses	39
Licensed Practical Nurses	37
Industrial Machinery Mechanics	10
Maintenance Workers, Machinery	4

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Talent and Pipeline Issues Good career information and career awareness are either not available, poorly presented or not communicated at all. Also, inadequate outreach by employers was cited as a considerable disadvantage to students in the education system looking to find what skills will be important in the workplace of the future.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses*; Licensed Practical Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance & Repair Workers*; Industrial Machinery Mechanics*; Maintenance Workers, Machinery* 	<p>Lack of good career information is not completely controllable and cannot be relied upon to totally eliminate occupational shortages. Lack of career awareness was ranked moderate to high in sensitivity, along with lack of good career information. Increasing employer outreach to K-12 and postsecondary students is not considered to be an adequate solution by itself to the shortage problem. It was given a higher sensitivity rating, compared to good career information and career awareness.</p>
<p>Education and Training Capacity Postsecondary and continuing education and training are inadequate due to lack of access, lack of resources, and/or lack of will. Insufficient funding, training staff, along with insufficient mathematics and science preparation are listed as underlying causes of critical skills shortages. The desired training is often offered at times that are inconvenient for current workers in these occupations. Lack of financial incentives to teach was also offered as an impediment in nursing instruction. Sixty percent of manufacturing employers indicated that they typically reject between 50-100% of applicants as unqualified.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance & Repair Workers* Industrial Machinery Mechanics* Maintenance Workers, Machinery* 	<p>The message here is that students and workers are not receiving the necessary training and education required for the demands of critical growth occupations. Training accessibility is an inherent problem in Region 11 and has a high sensitivity rating. Insufficient math and science preparation was listed as the cause most likely to be affected through the SSI.</p>
<p>Employer Recruitment and Retention Practices Employers are not currently designing or conducting recruiting programs to draw workers into manufacturing jobs. Employers are creating undesirable working conditions, such as mandatory overtime, extended shift work, and excessive paperwork. These conditions are driving workers away from nursing occupations in particular. Within maintenance occupations, the main barriers to retention offered were undesirable geographic location and working hours. Employees</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance & Repair Workers* 	<p>Employers need to support employees in developing new skills by offering training options that are consistent with workers' schedules. Employers not implementing</p>

<u>Contributing Shortage Factors</u>	<u>Occupations Most Affected</u> *Denotes Top 5 Shortage Occupation	<u>Sensitivity Rating</u>
<p>Employer Recruitment and Retention Practices (Continued)</p> <p>also indicated that professional development was a low priority with their employers and that incentives to train were not readily apparent in the maintenance occupations. There is a perception problem among the workforce when it comes to working in Manufacturing. Employers have difficulty implementing workplace practices such as flexible hours, voluntary overtime, and professional development because many employers rely on undesirable shift work in their operations.</p>	<ul style="list-style-type: none"> Industrial Machinery Mechanics* Maintenance Workers, Machinery* 	<p>more desirable work schedules received a moderate to high sensitivity rating.</p>
<p>Wage Rates and Benefits</p> <p>Low wages compared to other labor market areas in Indiana is impacting workforce retention and recruitment to the manufacturing occupations in this region. Growing a maintenance workforce is made more difficult because of the low wages. Transferring into industrial maintenance occupations is usually accompanied by accepting lower wages compared to other manufacturing occupations. Within nursing, pay and benefits again are not competitive in comparison to most other areas in Indiana and nationally. Low wages for nursing faculty are also contributing to shortages within nursing occupations by creating a shortage of qualified training staff. Training staff are unwilling to commit to this field because of the low wages paid vs “working” nurses.</p>	<p><u>Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* Nursing Instructors <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance & Repair Workers* Industrial Machinery Mechanics* Maintenance Workers, Machinery* 	<p>Low pay in both of these industries was given a relatively high sensitivity rating in comparison to other root causes.</p>
<p>Other</p> <p>Other root causes identified were: 1) people lack confidence in a particular industry as a good place to build a career (industry growth, public perception); 2) stress and burnout; and 3) demographic shifts (aging workforce, regional image). Of these factors, lack of confidence in the industry as a good place to build a career occurs more in manufacturing than in the health care industry. Employment in manufacturing has declined over the years, with the majority of new job openings resulting from retirement rather than industry and occupational growth. Recent closings by local manufacturers have received media attention, along with reports of outsourcing jobs to foreign countries. This has a negative effect on those who are looking for a stable industry on which to stake their careers. Stress and burnout among employees most often occurs in the nursing field. For health care, most everyone said that there are not adequate staffing levels for the workload. In addition, changes in technology were identified as a likely root cause for future shortages. Both of the critical growth occupation groups listed in this report indicated a need for life-long learning to keep up with technology changes.</p>	<ul style="list-style-type: none"> 1)Maintenance & Repair Workers* Industrial Machinery Mechanics* Maintenance Workers, Machinery* 2)Registered Nurses* Licensed Practical Nurses* <p><u>3) Health Care</u></p> <ul style="list-style-type: none"> Registered Nurses* Licensed Practical Nurses* <p><u>Manufacturing</u></p> <ul style="list-style-type: none"> Maintenance & Repair Workers* Industrial Machinery Mechanics* Maintenance Workers, Machinery* 	<p>Lack of confidence in a particular industry received a high sensitivity rating, while stress and burnout had a medium sensitivity rating. Workforce aging was given a medium sensitivity rating, while adverse regional image was not addressed in the report, except that it was tied to low wage rates.</p>

Excerpts from Report

“Ultimately, inefficient and ineffective labor markets are at the root of all shortages. If the labor market is functioning efficiently, students are also receiving and using information about labor market trends and predictions to make a career decision consistent with their interests, aptitudes, and income needs.”